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The Influence of the Physical Education Teacher on Intrinsic Motivation, Self-Confidence, Anxiety, and Pre- and Post-Competition Mood States

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One of the fundamental problems facing teachers of physical education (PE) is how to increase pupils' motivation. From the point of view of goal achievement, guidelines need to be established so that information may be used to greater effect in classes. This study examined the relationship between the motivational climate created by the PE teacher and the intrinsic motivation of the preparatory sessions together with self-confidence and anxiety prior to competition and pre- and post-competition mood states. The sample was made up of school children (*M* age = 11.7) from a state school (*N* = 115), who, after an introduction to an athletics course of 12 sessions, took part in a sports competition. During this time, a teacher (trained to this effect) manipulated the motivational climate, adapting the strategies of TARGET (11, 12, 26, 28). The mastery climate was linked to enjoyment, perceived ability, and effort in the PE classes, as well as to pre-competition somatic anxiety and post-competition vigor. On the other hand, the performance climate was associated with self-confidence, pre-competition vigor, and post-competition stress. The results are discussed in relation to achievement goal theory and motivational climate manipulation.

Key Words: theory of goal achievement, physical education, motivational climate, school sport, sport motivation

Key Points:
- The relationship between the motivational climate in physical education classes and intrinsic motivation was assessed.
- Teaching strategies and practices that determine the motivational climate in physical education classes were manipulated.
- The influence of motivational climate on self-confidence, anxiety, and pre- and post-competition mood states was observed.

One of the problems that most preoccupies the teacher of PE is how to increase his or her pupils' motivation in sporting activity. This study arises from the need to analyze, from the goal achievement point of view, motivational climate influences created by the PE teacher on intrinsic motivation, self-confidence, and pre- and post-competition states of mind, and in this way to be able to establish some guidelines or strategies for teacher intervention.

The appropriateness of guiding achievement goals in sporting activities has been shown in various studies (6, 7, 9, 27, 30). Their results point to the conclusion that sport may not be the best means of achieving genuinely educational objectives for adolescents, and they also suggest that what needs to be examined is not sport in itself but the success structure that stresses the involvement of the ego in the middle school years.

Ames (1, 2) and her colleague Archer (3) have used the term *motivational climate* to refer to the situational goal structure, and the terms *mastery* and *performance* to achievement situations of task involvement and of ego involvement, respectively. According to Ames (2), these two climates are a result of the teaching methods, the pupils' learning groups, and the teacher's conceptions of what constitutes success and failure. A mastery orientated climate exists when individuals perceive that their effort, learning, task success, and participation are evaluated by the teacher. On the other hand, the teacher creates a performance oriented climate when pupils perceive that the climate is focused on interpersonal competition, public evaluation, and social comparison.

Dweck and Legget (10) suggest that personal goal orientation can be seen as a variable that oscillates according to individual differences, which determine the a priori likelihood of a private goal being adopted, thus representing an individual behavioral pattern, where contextual factors are viewed as possible agents of change. Thus, the more individuals sense the motivational climate to be task- or ego-involved, the greater the probability they will behave in accordance with the situational structure (3).

Several research studies have examined the relationship between perceptions of the motivational climate, personal goal orientations, and emotional and cognitive responses in sport. Seifriz, Duda, and Chi (23) found that basketball players who perceived the climate to be mastery-focused showed higher intrinsic motivation. Kavussanu and Roberts (13) noticed that the perception of mastery climate was associated with enjoyment, effort, perceived competency, and low tension, while the perception of a performance climate was associated with high levels of tension. It has been suggested that an interactive approach, attempting to combine both individual goal orientations and perceptions of motivational climate, would provide a better comprehension of the children's achievement behaviors and their perceptions of their PE experiences (21, 28). If the personal orientation is strong, it is less likely to be suppressed by external driving forces or in need a stronger situational impetus to do so. On the other hand, when this orientation is weak, it is more easily changed by situational influences.

In the opinion of Epstein (11, 12), the teacher plays an active role in the creation of the perception of the motivational climate and, therefore, in the quality of the motivation. Consequently, it seems necessary to develop teaching practices and strategies that make it easier for the teacher to create a motivational climate of task involvement (2, 14, 18, 21, 27). Epstein (11, 12) maintains that the motivational climate of a context is defined by a set of interdependent variables or structural features. He coined the acronym TARGET to represent the task, authority, reward, grouping, evaluation, and timing in achievement contexts. Ames and Maehr (4) adopted this focus and developed a program of teacher intervention that successfully provided a motivational climate of task involvement in the classroom.

With regard to PE, Treasure (26), using the model of intervention developed by Ames and Maehr (4), successfully modified the motivational climate. The results clearly showed that the children in the climate of ego involvement sensed this, as did those in the climate of task involvement. They also showed that the children who perceived a motivational climate of task involvement evidenced a significantly more adaptive pattern of cognitive and affective responses to achievement than those who perceived a motivational climate of ego involvement.

White, Kavussanu, and Guest (29) looked closely at the relationship between goal orientation and the perceptions of the motivational climate created by significant others in the case of young athletes. The results indicated that goal orientations were differentially associated with perceptions of the motivational climate created by significant others. Specifically, a task involved climate was related to the perception of task involvement created by the coach and both parents. On the other hand, ego orientation was related to the perception of an ego climate created by the father, and a worry-conducive climate created by both parents. Goal orientations were not significantly related to perceptions of task or ego climate created by the PE teacher. However, the authors maintain that this can be changed and suggest that it is necessary to train first class teachers by means of teacher training programs.

Carr, Weigand, and Hussey (5) analyzed the relative influence of parents, teachers, and peers on goal orientations, intrinsic motivation, and physical competence of children and adolescents in PE. The multiple regression analysis indicated that parents were the most influential social agents on children's task and ego orientations, intrinsic motivation, and physical competence, and that peers and teachers were the most influential social agent on adolescent's goal orientations, intrinsic motivation, and physical competence. These conclusions give us reason to believe that teachers can fulfil a task of immense importance for pupils in their teens.

The present study is based on the belief that teachers can play a significant role in the physical and intellectual development of students by providing stimulating educational environments (5, 24). We put forward the hypothesis that the motivational climate created by the teacher in PE classes was related to intrinsic motivation, as well as to self-confidence and competition emotions. Moreover, the mastery motivational climate was related to enjoyment, perceived competence, dedicated compromise in the preparatory sessions, pre-competition somatic anxiety, and post-competition vigor. In contrast, the performance climate was linked to self-confidence, pre-competition vigor, and post-competition stress.

Method

Participants

A total of 115 children (age = 11 and 12 years) were randomly chosen from a state school in a city of approximately 200,000 inhabitants in the North of Spain. The sample included 56 girls (*M* age = 11.8 years) and 59 boys (*M* age = 11.6 years).

Protocol

The children were randomly assigned to two groups: Group A included 57 children (28 girls and 29 boys; *M* age = 11.7 years), and group B included 58 children (28 girls and 30 boys; *M* age 11.8 years). From thereon and for 4 successive weeks, the same teacher (trained to that effect) manipulated the motivational climate during a total of 12 one-hour sessions of PE for each

group. Group A underwent a task involved motivational climate, while group B encountered one of ego involvement, according to procedures that are detailed later. A teaching unit (Introduction to Athletics) was conducted during this period.

A track and field competition, comprising 12 events, 6 in the masculine category and 6 in the feminine, was organized for the following week. The mastery climate group won a total of 15 medals (6 gold, 3 silver, and 6 bronze), while the performance motivational climate group won a total of 21 medals (6 gold, 9 silver, and 6 bronze).

Procedures in the Manipulation of the Motivational Climate

The program of intervention was drawn up by adapting the model developed by Treasure (26), and the procedures for encouraging task involvement suggested by Treasure and Roberts (28). Treasure (26) identified the structures appropriate both for the promotion of the task achievement goal, as well as that for the ego in a PE context, and organized them into the six areas of Epstein's TARGET (11, 12). The strategies we used to manipulate the motivational climate, also following the sections of TARGET, appear below.

Task. To create a motivational climate of ego involvement, the teacher presented the children with a set of mainly routine, separate tasks. The method was analytical; movements were broken down to facilitate step-by-step learning. This type of exercise allows little variation, and its learning is based on the repetition of identical elements so that performances can be compared. In contrast, to create a motivational climate of mastery, the pupils were presented with predominantly perceptive, open-ended tasks as a whole. In this situation, the pupils had to solve problems in a changing context, a variety of different tasks, seeking ease in adaptability and the achievement of their own short-term realistic goals. Thus, they had less opportunity or need to compare their performance with that of others and so developed the awareness of their own skill, which did not depend on comparison with others.

Authority. In the performance climate, all important decisions were made by the teacher: what was to be done, when it would be done, and how to do it. To this aim, deductive teaching methods, basically that of "direct command," were used (i.e., the teacher makes all the decisions in the class). In the mastery climate, the teacher bore in mind the pupils' interests, and they participated actively in decision making. Inductive methods were employed: "guided discovery," wherein the pupil must discover the correct response with the teacher's guidance, and "problem solving," wherein the pupil must find the right answer on his or her own.

Rewards. In the ego climate, rewards were given to the pupils in such a way as to invite social comparison: The achievements of the most outstanding children were rewarded in an unmistakably public way. In the task climate, individual progress and personal improvements were recognized or rewarded in private, with the object of promoting self-referenced perceptions.

Grouping. In the performance condition, children were stimulated to work competitively, because competition causes comparisons to be made within the peer group. By contrast, in the mastery condition, small cooperative groups were set up in an attempt to avoid inter-group rivalry.

Evaluation. To encourage an ego involved climate, pupils' skills were publicly compared with those of others, while to encourage task involvement, personal improvement was assessed privately as were progress made towards individual goals, participation, and attempts at self-evaluation.

Time. Finally, in the performance climate, the teaching rhythm and time assigned to each task was always controlled, with the time assigned for learning specific task, as well as that of pupil involvement, observed rigidly. On the contrary, in the mastery climate, pupils were allowed to take part in decision making with regard to the pace of teaching and learning and the time assigned to each activity.

Each of these strategies was put into operation by means of a wide range of teaching practices specifically designed for an introduction to athletics course. The intervention model, therefore, afforded comparison between a motivational climate of ego involvement, which stresses normative performance, the most extensive one in current PE, and a motivational climate of task involvement, focused on the learning process and self-improvement.

Instruments

Once divided, the groups were given the following set of questionnaires: the Perception of Success (POSQ), constructed by Roberts and Balagué (2, 19, 20); the Enjoyment of the Practice of Sports (validated in Spanish by Cervello et al. 5, as Cuestionario de Diversion de los sujetos con la Practica Deportiva, CDPD), created by Duda and Nicholls (25); and the test of Achievement Motivation in Physical Education (validated in Spanish as Motivacion en la Eduacion Fisica, MEF), written by Nishida (17). These questionnaires were given in order to establish initial non-significant differences between the two groups with regard to the parameters indicated. A discriminant analysis (described later) confirmed this. At the end of the 12 sessions, the POSQ and MEF were re-administered.

Before the competition, both groups were given the following questionnaires: the CSAI-2 (Competitive State Anxiety Inventory; 16) and the POMS (Profile of Mood States; 15). Immediately after the events, the POMS was completed again.

All questionnaires were completed in small groups. Five researchers explained the purpose of the study and helped children when they did not understand the meaning of the items in the questionnaires. At all times, the study had parental and teaching staff permission.

In order to determine the psychometric properties of the instruments, factorial analyses of the main components using oblique and orthogonal rotations were computed. Tabachnick and Fidell (25) recommend orthogonal rotation (varimax) when the correlation between factors is less than .30, and oblique rotation, when the correlation is greater than this. All the items of the different tests were plotted on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal consistency of the questionnaires was confirmed by the calculation of Cronbach's alpha coefficient.

The Perception of Success Questionnaire (POSQ) was used to evaluate personal achievement goal requirements. The POSQ is a scale of 12 items: 6 of task involvement ("I've mastered

something I couldn't do before," "I reached my goal") and 6 of ego involvement ("I'm the best," "I beat the others"). The subjects responded to the stem phrase, *I feel successful in sport when....* In the present study the authors extracted two factors from the questionnaire, Ego Orientation and Task Orientation, with eigen values greater than 1.00 (3.77 for the Ego factor and 2.47 for the Task factor). Together they explain 51.9% of the variance, with the Ego Factor affording a greater percentage (31.4%) as compared with the Task Factor (20.5%). With regard to the internal consistency of the questionnaire, the Cronbach alpha coefficient was .85 for the items of Ego factor and .70 for those of Task factor.

The Achievement Motivation in Physical Education Test (17), adapted into Spanish by Ruiz, Graupera, and Gutierrez (22), was used to measure commitment, personal dedication, perceived motor ability, and anxiety before failure and stress situations in PE classes. The MEF is a 21-item scale, divided into three subscales: 8 commitment and task dedication items ("I have taken the activities very seriously," "I have practiced again and again to succeed in doing the exercises well"), 4 perceived motor ability items ("Everyone's told me I can do any exercise," "I got a good level," "Everything I had to do turned out well") and 9 mistake and stress situations anxiety items (I got more nervous than the others, When I made a mistake, I was upset in class the next day). The 3 factors emerged in this study. In total, they account for 61.0% of the variance, with the Anxiety factor explaining the most variance with 32.4%, followed by the Commitment factor with 21.1% and the Perceived Competency with 7.4%. The Cronbach alpha coefficients were .91, .89, and .74, respectively.

The degree of enjoyment was measured with the CDPD (6, 8). It has 8 items initially grouped into two factors, labeled Boredom ("The end of the class couldn't come soon enough," "I was bored"), and Enjoyment ("Doing PE was interesting," "I enjoyed doing things"). In our work only the Enjoyment factor emerged, explaining 61.0% of the variance. Cronbach's alpha for all items was .90.

To evaluate pre-competition anxiety and self-confidence, we used the CSAI-2, developed by Martens et al. (16). The scale has 27 items divided into 3 subscales: 9 Cognitive Anxiety items ("I worry about losing"), 9 Somatic Anxiety items ("I feel tension in my stomach") and 9 Self-confidence items ("I feel confident because I imagine achieving my goals"). The 3 factors emerged in our study, explaining 60.5% of the variance. The Self-confidence factor explains the most variance with a 36.4%, followed by Somatic Anxiety (17.0%), and Cognitive Anxiety (7.1%). Alpha coefficients were .93, .93, and .83, respectively.

Finally the Profile of Mood States (POMS), by McNair et al. (15), was administered to measure pre- and post-competition mood states. We used the version abridged to 15 items, divided into 5 subscales: Hostility ("angry," "annoyed"), Depression ("defenseless," "sad"), Vigor ("lively," "full of energy"), Fatigue ("tired," "no energy"), and Tension ("worked up," "uneasy"). These same factors surfaced in this study. Overall they account for 79.2% of the variance. The Hostility factor accounted for 40.5%, the Depression factor for 14.1%, the Vigor factor for 10.9%, the Fatigue factor for 7.0%, and the Tension factor for 6.7%. The Cronbach alpha coefficients were .96, .99, 93, .92, and .86, respectively.

Results

The hypothesis was that the motivational climate created by the PE teacher (performance-mastery) could be related to intrinsic motivation and anxiety in the preparatory sessions, to pre-competition self-confidence and anxiety, and pre- and post-competition mood states. To test the hypothesis, a discriminant analysis was conducted, using the motivational climate as a criterion variable (1 = mastery, 2 = performance). The stepwise method was used in the selection of the variables, taking as critical values for the entrance and exit *F* statistics, 3.84 and 2.71, respectively (minimum *F* to enter and maximum *F* to remove). A discriminant function emerged (taking into account that the maximum number of groups is equivalent to two, the maximum possible number of functions extracted is equivalent to one), that selected eight variables (Wilks' lambda = .22; rc_1 = .88). It can be seen in Table 1 that there was a high, positive load in the mastery motivational climate and a high, negative load in the performance motivational climate. The mastery climate was associated with enjoyment, perceived ability, and commitment and dedication in the preparatory sessions, as well as pre-competition somatic anxiety and post-competition vigor. The performance climate was linked with self-confidence, pre-competition vigor, and post-competition stress. The effectiveness index of the discriminant function was 95.5%.

Table 1 Results of the Discriminant Analysis

Criterion variable	Function 1 loadings
Motivational Climate	
Mastery	1,945
Performance	–1,744
Predictor variables	
Intrinsic motivation and anxiety in the run-up to the competition	
Enjoyment	.350
Commitment and dedication	.313
Perceived ability	.737
Error anxiety	—
	—
Self-confidence, anxiety and pre-competitive mood	
Self-confidence	–.638
Somatic anxiety	.407
Cognitive anxiety	—
Hostility	—
Depression	—
Vigor	–.303
Fatigue	—
Stress	—
Post-competition mood	
Hostility	—
Depression	—
Vigor	.327
Fatigue	—
Stress	–.564

Note. The stepwise method was used in the selection of the variables, taking as critical values for the entrance and exit *F* statistics, 3.84 and 2.71, respectively (minimum *F* to enter and maximum *F* to remove).

Discussion

The results of this study support the findings of previous research, consistent with the classroom interventions of Ames and Archer (3), with the conclusions of Treasure's research (26) into the

particular sphere of PE and, in general, with the predictions of goal achievement theory. Those pupils submitted to a task involved motivational climate, where the demonstration of ability is based on individual improvement and effort, exhibited a markedly more adaptive behavioral pattern than those undergoing an ego involved motivational climate, where the demonstration of ability is based on set standards and student competition.

This study makes it clear that it was possible to have an influence on children's motivation in a relatively short period of time because, as demonstrated, the mastery climate was associated with enjoyment, perceived ability, and effort. In fact, in the 4 weeks of initiation to athletics, the task involved climate group displayed a significantly higher level of intrinsic motivation. Moreover, it is evident that the PE teacher can play an active role in the creation of positive experiences for his or her pupils. The TARGET strategies can be effective tools in the formation of a task involvement motivational climate.

However, the children in the ego involvement climate fared better in the pre-competition moments with regard to self-confidence and vigor (spirits, vitality, energy). Those from the mastery climate, on the other hand, showed higher levels of somatic anxiety, that is, the pre-competitive emotional state was notably better in the former group.

The results are not surprising in light of the fact that the students were constantly submitted to competitive situations during the time spent in learning athletics and had many chances to compare their abilities with those of others. To a great extent, they were trained to bear competition pressure.

Nevertheless, from the educational point of view the truly important fact was that this situation changed once the sporting contest was over. In spite of winning fewer medals, the pupils submitted to the mastery climate were in notably better spirits. Indeed, the mastery climate was associated with vigor (spirits, vitality, energy), whereas the performance climate became related with post-competitive stress.

These results would seem to show that the children who were introduced to athletics in a context of ego involvement had expectations of victory in the competition, of being the best, of defeating the others. In contrast, those submitted to the climate of task involvement assessed their participation in the sporting event, not in terms of the objective results, but in terms of their attitude towards it -- their effort, dedication, and personal improvement. The sports competition was a more gratifying experience for the children in the task involved situation.

Stemming from these conclusions we would hypothesize that after participation in other competitions throughout a season, the pre-competitive mood in the children submitted to a mastery climate would also become the better of the two. This change would be the logical conclusion of absorbing and adapting to more gratifying sporting experiences.

In general, mastery experiences endow the task-orientated students with deeper feelings of satisfaction, because they are engaged in showing skill by learning and developing skills. It seems unlikely that supremacy experiences will be sufficient to cause satisfaction in the ego-oriented students, because the demonstration of ability demands the defeat of others (28). It is

more feasible that the situations guiding individual attention to social comparison and achievement compared with that of others will eventually result in the weakening of intrinsic motivation (13). These results corroborate the malleability of goal orientation with time and that it can be altered by intervention or environmental influences.

Although in White et al.'s study (29), goal orientation was not markedly associated with the PE teacher's creation of motivational climate -- in comparison with that of coaches and parents, he or she rated less as a socializing agent -- the results of our study suggest a substantial change could be made in this aspect. In our opinion, the changes that can be wrought in personal goal orientation depend not only on the number of interactions but also on their quality. PE teachers can and must play a significant role in the integral development of their pupils, providing them with a stimulating educational environment (5).

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